

# Creating Healthy School Environments

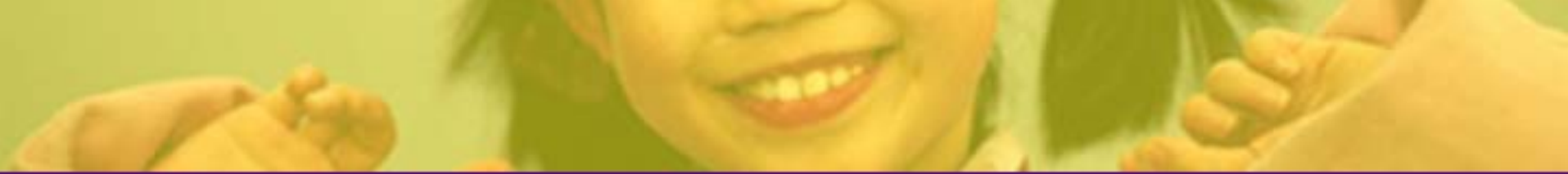
US EPA Region 5





# Goals

- An understanding of all of EPA's regional school and children's health related programs.
- An *overview* of children's health and schools
- Strategies and tools for working with schools, especially introducing and applying voluntary programs
- An ability to educate and raise awareness externally



# External Goals

- Provide short training sessions
- Raise awareness of children's health, schools issues, and other environmental concerns.
- Help communities to develop strategies to address school and children's health issues
- To serve an *effective resource* to communities on children's health and school related programs.



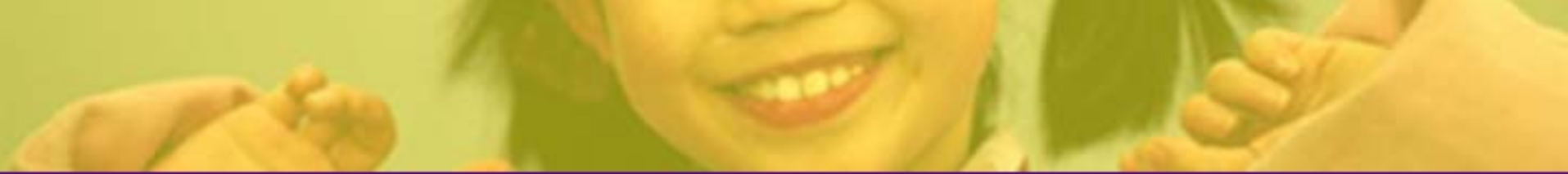
# Outline

- Overview of Schools
- Children's Health
- Overview of EPA children's health related programs
- Strategies for Working with Schools
- Discussion and Overview



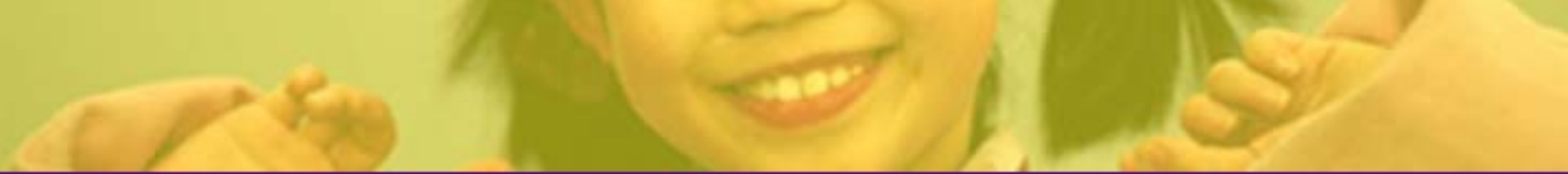
# Overview of Schools

- 20% of the US population, nearly 56 million people spend time in schools
- Elementary and secondary education is a \$390 billion/yr enterprise employing more than 7.6 million people
- Over 27,000 schools in Region 5



# Unique aspects of schools

- Tight budgets
- Densely populated space
- Old buildings / deferred maintenance
- Many sources of pollution
- “Inventive” space utilization /Additions



# Unique aspects of Schools

- Many competing priorities
- Longstanding concerns about unfunded mandates & EPA (e.g., asbestos)
- May be unaware of environmental issues
- No clear authority or guidelines



# Existing Problems in Schools

- Half of schools reported at least 1 unsatisfactory environmental condition
- 33% reported multiple unsatisfactory conditions
- 26% of all public schools report ventilation problems

“School Facilities: The Condition of America’s Schools”, US GAO, February 1995






# Financial Obstacles

- 75% of the schools have spent funds to remove hazardous substances or correct environmental problems
- 76% report needing to spend money to bring schools into good overall condition
- Only 7% of the funding for schools come from the federal government



# DESIGN Tools for Schools

- New voluntary, web-based guidance
- Design, construction, renovation and operations and maintenance of school facilities
- Complements IAQ Tools for Schools guidance for existing schools
- Promotes IAQ



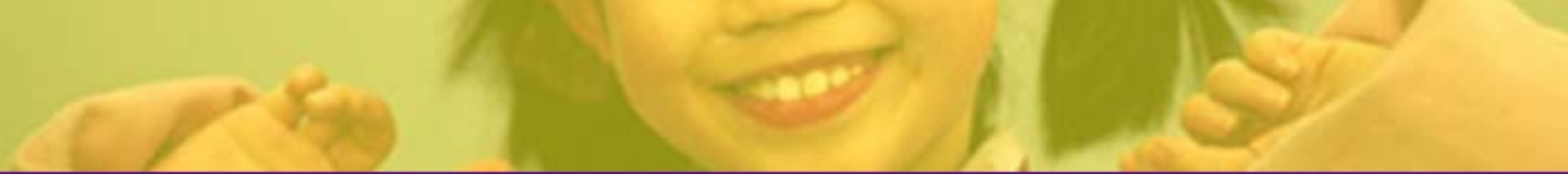
# Facility Operations and Maintenance

- Many schools practice reactive vs. proactive
- Deferred Maintenance, not dealing with the problems, dealing with symptoms
  - Lack of resources
- Encourage preventive maintenance
  - Example: one school \$364/yr on preventive maintenance over 22 years would save \$1.6 million in repairs



# Ventilation and Energy Use

- Main Purposes
  - To provide thermal comfort
  - To help maintain good indoor air quality through adequate ventilation through filtration
- HVAC systems are among the largest energy consumers in schools



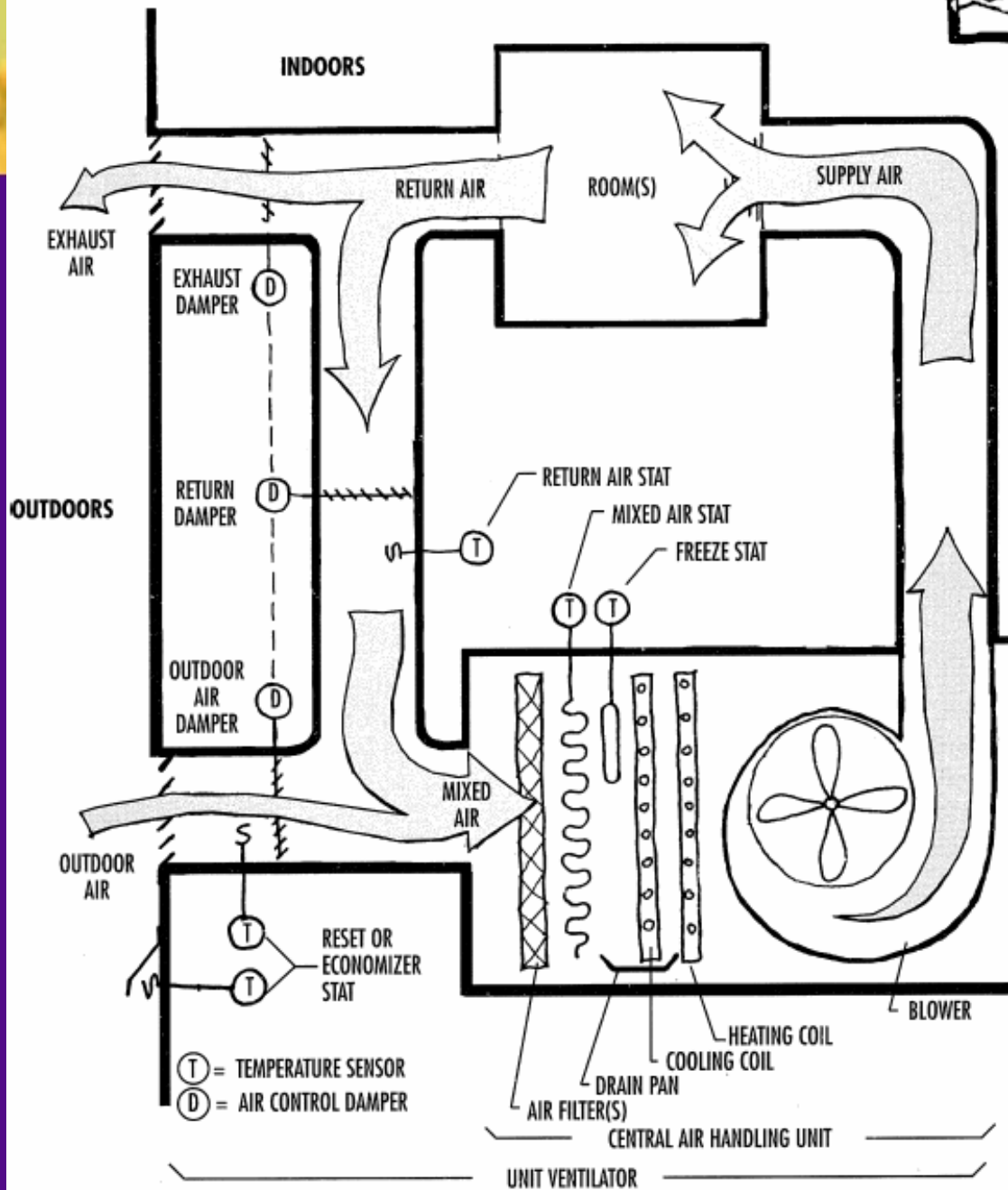
# Types of Air Handling Units

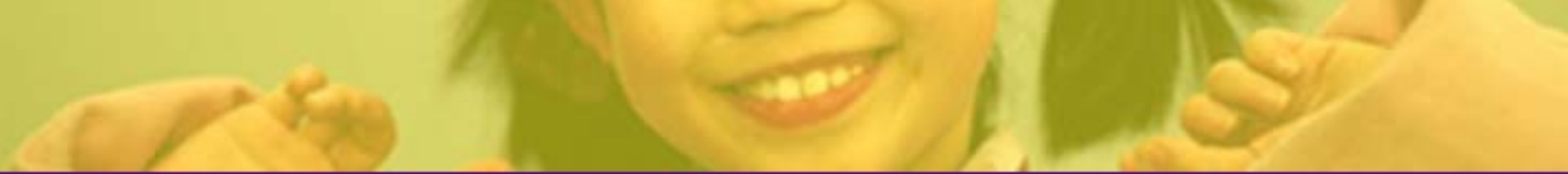
- Unit Ventilators
  - Serve a single room without ducts
- Central Air Handling Units
  - Serve several rooms via duct work

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## Advantage of Central Air Handling Units

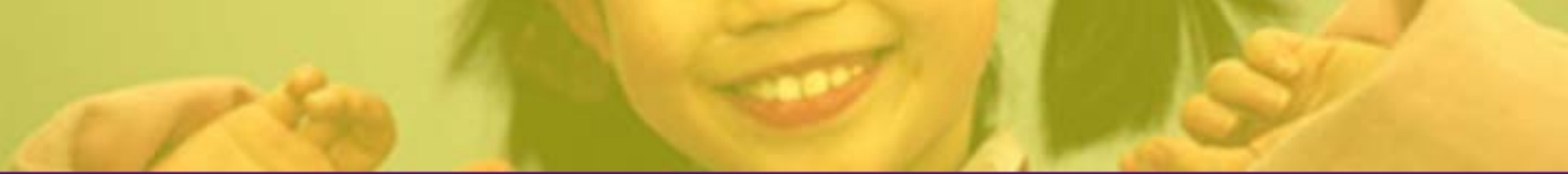
- Quieter
- More energy efficient
- Better air filtration
- Easier to maintain
- Less drafty
- Better control of humidity





# A word on Filters

- Must be properly selected and regularly replaced
- Dirty filters restrict airflow and reduce efficiency



# A Word on Carbon Dioxide

- Elevated CO<sub>2</sub> indicates an insufficient supply of outdoor air
- Ideally classrooms should have CO<sub>2</sub> concentrations of less than 1000 ppm